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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,111	05/06/2005	Liyao Ma	056946-0102	5191

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FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER

PATIDAR, JAY M

ART UNIT PAPER NUMBER

2862

DATE MAILED: 09/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/534,111

Applicant(s)

MA ET AL.

Examiner

Jay M. Patidar

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 May 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/6/05</u> | 6) <input type="checkbox"/> Other: ____. |

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
2. Figure 3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.
3. Claim 8 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim *cannot depend from any other multiple dependent claim*. See MPEP § 608.01(n). Accordingly, the claim has not been further treated on the merits.

4. Claims 7,9-10,12 are objected to because of the following informalities:

In claim 7, the phrase "the same arms" is not clearly understood and it is not clearly defined.

In claim 9, the phrase "two adjacent resistors" is vague as to whether two adjacent resistors of the same bridge or one resistor from one bridge and second resistor from the second bridge.

In claim 10, the phrase "face with each other" is vague as to what is meant by "face with each other" since two adjacent resistors would be side-by-side.

In claim 12, "with same number" is not clearly understood.

Appropriate correction is required.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2,5,7,9 are rejected under 35 U.S.C. 102(b) as being anticipated by Bezing et al. (6,332,278).

As to claim 1, Bezing discloses a magnetic displacement measurement device with a ruler body, a vernier, a secondary ruler, a measurement circuit (see fig. 1); the magnetic ruler 21 is of a grid type; wherein the grids are arranged at a constant interval along a movement direction with a grid pitch of λ ; the magnetic sensor is composed of magnetoresistive sensors which are opposite to the magnetic ruler and arrange along the movement direction and the circuit comprises at least two measurement bridges of magnetoresistive sensors (see figs. 2,4-5; col. 5, lines 14-27; fig. 3 and page 2 of the instant application specification).

As to claim 2, Bezing discloses a non-magnetic substrate (shaft 2).

As to claim 5, the phase difference with two measurement bridges is 90° .

As to claim 7, the bridge is spaced $\lambda/4$ from the other bridge (col. 6, line 50).

As to claim 9, the space between two adjacent resistors is $\lambda/2$ (fig. 3 of the instant application).

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 3-4,6-7,9-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bezing et al. in view of Schuhl et al. (5313186).

As to claims 3,6-7, Bezing discloses the magnetic displacement measurement device as explained above except for the formation of the magnetic sensor. It is known in the magnetic field sensing art to have magnetoresistive sensors formed from magnetic and non-magnetic layer alternatively arranged as taught by Schuhl in figure 1. Consequently, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Bezing to use MR with alternatively arranged layers as explained above and as taught by Schuhl to sense weak magnetic field.

As to claim 4, the magnetic layer of MR is an alloy material (col. 2, line 39+).

As to claims 9-11,13, it would have been obvious to one having ordinary skill in the art to have space $n\lambda/2$ or λ between two adjacent resistors of the bridge to provide desired output from the bridge. This feature is well known in the art (as evidenced in US patents 4,639,807, 5,680,042 and 6,550,150, fig. 6 and fig. 3 of the instant application). The magnetoresistors on each arm of the bridges are composed of constant number of MRs (e. g. 2,4 etc).

As to claim 12, Bezinge discloses width of the MR smaller than $\lambda/2$ (see figs. 2-3).

As to claim 14, the scale in Benzinge is embedded in the non-magnetic material substrate (fig. 2).

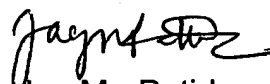
As to claim 15, the scale in Benzinge is embedded in the non-magnetic material substrate (fig. 2). It is considered an engineering design choice to either have periodic magnetization of different poles or teeth/slots since both would provide the same result.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Note PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jay M. Patidar whose telephone number is 571-272-2265. The examiner can normally be reached on M-Thur 7:00-5:30.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jay M. Patidar
Primary Examiner
Art Unit 2862
Email: Jay.Patidar@USPTO.gov

September 6, 2006